

**AMENDMENTS TO THE CLAIMS:**

Please add new claims 61-65 and amend claims 9, 24, 31, 39, 50, and 54, as denoted in the following listing. This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A method, performed by a processing system, for evaluating customer value to guide loyalty and retention programs comprising ~~the steps of:~~  
~~calculating an individual customer's tenure~~ generating a hazard function model based on attributes relating to a plurality of current customer accounts;  
~~generating a hazard function for each of a plurality of new customers~~ an existing customer, to determine probability of churn, based on the ~~individual customer's tenure~~ hazard function model and account data associated with the customer and corresponding to the attributes;  
~~calculating a gain in lifetime value for the customer based on a change in the hazard function resulting from a retention effort each of the plurality of new customers;~~ and  
~~determining a focus for retention-based interactions with the customer a loyalty and retention program based on at least one of the hazard function and gain in lifetime value for each of the plurality of new customers.~~

2. (Currently amended) The method of claim 1, wherein calculating the gain in lifetime value includes:

calculating a lifetime value based on original contract terms and revenue associated with the customer generated for each of the plurality of new customers; and

calculating the gain in lifetime value based on a change in the hazard function resulting from by considering a new contract period using the formula  $ER^* - ER_0(0) = GLTV$ .

3. (Currently amended) The method of claim 1, wherein determining a focus for retention-based interactions with the customer a loyalty and retention includes:

analyzing the shape of the hazard function generated for the customer each of the plurality of new customers; and

specifying a set of marketing techniques based on the shape of the hazard function.

4. (Currently amended) The method of claim 1, wherein determining a focus for retention-based interactions with the customer a loyalty and retention program includes:

specifying a set of incentives offered to the plurality of new customers to offer the customer based on the gain in lifetime value.

5. (Original) The method of claim 3, wherein specifying the set of marketing techniques based on the shape includes:

determining, based on the shape of the hazard function, there is no effect on churn of a contract expiration.

6. (Original) The method of claim 5, wherein specifying the set of marketing techniques includes:

taking no further steps to deter churn.

7. (Original) The method of claim 3, wherein specifying the set of marketing techniques based on the shape includes:

determining, based on the shape of the hazard function, that there is a small increase in probability of churn at contract expiration, with an elevated post-expiration churn.

8. (Original) The method of claim 7, wherein specifying the set of marketing techniques includes:

having a moderate pre-expiration effort where new contracts or continued contracts are the goal.

9. (Previously presented) The method of claim 3, wherein specifying the set of marketing techniques based on the shape includes:

determining, based on the shape of the hazard function, that there is a large spike indicating high probability of churn at contract expiration and low probability of churn thereafter.

10. (Original) The method of claim 9, wherein specifying the set of marketing techniques includes:

concentrating effort on pre-expiration of contract where a contract renewal may not be required.

11. (Original) The method of claim 3, wherein specifying the set of marketing techniques based on the shape includes:

determining, based on the shape of the hazard function, that there is a large increase in probability of churn at expiration with high and increasing post-expiration probability of churn.

12. (Currently amended) The method of claim 11, wherein specifying the set of marketing techniques includes:

~~having specifying~~ a high intensity pre-expiration effort with continued competitive offers to maintain the customer.

13. (Currently amended) The method of claim 3 ~~4~~, wherein specifying the incentives includes:

determining that a value of the set of incentives offered to ~~each of the plurality of new customers~~ the customer does not exceed the gain in lifetime value.

14. (Currently amended) The method of claim 3 1, wherein determining a focus for retention-based interactions with the customer analyzing the shape of the hazard function includes:

clustering all of the hazard functions function for each of the plurality of new customers the customer and hazard functions for a plurality of other existing customers so that the hazard functions with similar shapes can be are grouped together according to shape, each group representative of a customer set.

15. (Currently amended) The method of claim 14, wherein determining a focus for retention-based interactions with the customer analyzing the shape of the hazard function includes:

determining, based on the overall shape of the clustered hazard functions, a focus for retention-based interactions for each customer set ~~what retention efforts to take to keep a new customer.~~

16. (Currently amended) An apparatus for evaluating customer value to guide loyalty and retention programs comprising:

a calculating module for ~~calculating an individual customer's tenure~~ generating a hazard function model based on attributes relating to a plurality of current customer accounts;

a generating module for generating a hazard function for ~~each of a plurality of new customers~~ an existing customer, to determine probability of churn, based on the ~~individual customer's tenure~~ hazard function model and account data associated with the customer and corresponding to the attributes;

a calculating module for calculating a gain in lifetime value for the customer based on a change in the hazard function resulting from a retention effort ~~each of the plurality of new customers~~; and

a determining module for determining a focus for retention-based interactions with the customer ~~a loyalty and retention program~~ based on at least one of the hazard function and the gain in lifetime value for each of the plurality of new customers.

17. (Currently amended) The apparatus of claim 16, wherein the calculating module for calculating the gain in lifetime value includes:

~~a calculating module for calculating~~ calculates a lifetime value based on original contract terms and revenue associated with the customer ~~generated for each of the plurality of new customers~~; and

~~a calculating module for calculating~~ calculates the gain in lifetime value based on a change in the hazard function resulting from ~~by considering a new contract period using the~~ formula  $ER^* - ER_0(0) = GLTV$ .

18. (Currently amended) The apparatus of claim 16, wherein the determining module ~~for determining a focus for a loyalty and retention~~ includes:

an analyzing module for analyzing the shape of the hazard function generated for the customer ~~each of the plurality of new customers~~; and

a specifying module for specifying a set of marketing techniques based on the shape of the hazard function.

19. (Currently amended) The apparatus of claim 16, wherein the determining module ~~for determining a focus for a loyalty and retention program~~ includes:

a specifying module for specifying a set of incentives ~~offered to the plurality of new customers~~ to offer the customer based on the gain in lifetime value.

20. (Original) The apparatus of claim 18, wherein the specifying module for specifying the set of marketing techniques based on the shape includes:

a determining module for determining, based on the shape of the hazard function, there is no effect on churn of a contract expiration.

21. (Currently amended) The apparatus of claim 20, wherein the specifying module ~~for specifying the set of marketing techniques includes:~~

~~a taking module for~~ specifies taking no further steps to deter churn.

22. (Original) The apparatus of claim 18, wherein the specifying module for specifying the set of marketing techniques based on the shape includes:

a determining module for determining, based on the shape of the hazard function, that there is a small increase in probability of churn at contract expiration, with an elevated post-expiration churn.

23. (Currently amended) The apparatus of claim 22, wherein the specifying module ~~for specifying the set of marketing techniques includes:~~

~~a having module for having~~ specifies a moderate pre-expiration effort where new contracts or continued contracts are the goal.

24. (Previously presented) The apparatus of claim 18, wherein the specifying module for specifying the set of marketing techniques based on the shape includes:

a determining module for determining, based on the shape of the hazard function, that there is a large spike indicating high probability of churn at contract expiration and low probability of churn thereafter.

25. (Currently amended) The apparatus of claim 24, wherein the specifying module ~~for specifying the set of marketing techniques includes:~~

~~a concentrating module for~~ specifies concentrating effort on pre-expiration of contract where a contract renewal may not be required.



26. (Original) The apparatus of claim 18, wherein the specifying module for specifying the set of marketing techniques based on the shape includes:

a determining module for determining, based on the shape of the hazard function, that there is a large increase in probability of churn at expiration with high and increasing post-expiration probability of churn.

27. (Currently amended) The apparatus of claim 26, wherein the specifying module ~~for specifying the set of marketing techniques includes:~~

~~a having module for having~~ specifies a high intensity pre-expiration effort with continued competitive offers to maintain the customer.

28. (Currently amended) The apparatus of claim ~~18~~ 19, wherein the specifying module ~~for specifying the incentives includes:~~

a determining module for determining that a value of the set of incentives ~~offered to each of the plurality of new customers~~ does not exceed the gain in lifetime value.

29. (Currently amended) The apparatus of claim ~~18~~ 16, further comprising wherein ~~the analyzing module for analyzing the shape of the hazard function includes:~~

a clustering module for clustering ~~all of the hazard function functions~~ for the customer and hazard functions for a plurality of other existing customers ~~each of the plurality of new customers~~ so that the hazard functions with similar shapes can be are grouped together according to shape, each group representative of a customer set.

30. (Currently amended) The apparatus of claim 29, wherein the determining analyzing module for analyzing the shape of the hazard function includes:

~~a determining module for determining~~ determines, based on the overall shape of the clustered hazard functions, a focus for retention-based interactions for each customer set ~~what retention efforts to take to keep a new customer.~~

31. (Currently amended) A computer-readable medium including instructions, executable by a processor, for performing a method for evaluating customer value to guide loyalty and retention programs, the method comprising:

~~calculating an individual customer's tenure~~ generating a hazard function model based on attributes relating to a plurality of current customer accounts;

~~generating a hazard function for each of a plurality of new customers~~ an existing customer, to determine probability of churn, based on the individual customer's tenure hazard function model and account data associated with the customer and corresponding to the attributes;

~~calculating a gain in lifetime value for~~ the customer based on a change in the hazard function ~~each of the plurality of new customers; and~~

~~determining a focus for~~ retention-based actions ~~a loyalty and retention program~~ based on at least one of the hazard function and gain in lifetime value ~~for each of the plurality of new customers.~~

32. (Currently amended) The computer-readable medium of claim 31, wherein calculating the gain in lifetime value includes:

calculating a lifetime value based on original contract terms and revenue associated with the customer ~~generated for each of the plurality of new customers~~; and

calculating the gain in lifetime value based on a change in the hazard function resulting from ~~by considering~~ a new contract period ~~using the formula  $ER^* - ER_0(0) = GLTV$~~ .

33. (Currently amended) The computer-readable medium of claim 31, wherein determining a focus for retention-based actions ~~a loyalty and retention~~ includes:

analyzing the shape of the hazard function generated for the customer ~~each of the plurality of new customers~~; and

specifying a set of marketing techniques based on the shape of the hazard function.

34. (Currently amended) The computer-readable medium of claim 31, wherein determining a focus for retention-based actions ~~a loyalty and retention program~~ includes:

specifying a set of incentives offered to the customer ~~plurality of new customers~~ based on the gain in lifetime value.

35. (Original) The computer-readable medium of claim 33, wherein specifying the set of marketing techniques based on the shape includes:

determining, based on the shape of the hazard function, there is no effect on churn of a contract expiration.

36. (Original) The computer-readable medium of claim 35, wherein specifying the set of marketing techniques includes:

taking no further steps to deter churn.

37. (Original) The computer-readable medium of claim 33, wherein specifying the set of marketing techniques based on the shape includes:

determining, based on the shape of the hazard function, that there is a small increase in probability of churn at contract expiration, with an elevated post-expiration churn.

38. (Original) The computer-readable medium of claim 37, wherein specifying the set of marketing techniques includes:

having a moderate pre-expiration effort where new contracts or continued contracts are the goal.

39. (Previously presented) The computer-readable medium of claim 33, wherein specifying the set of marketing techniques based on the shape includes:

determining, based on the shape of the hazard function, that there is a large spike indicating high probability of churn at contract expiration and low probability of churn thereafter.

40. (Original) The computer-readable medium of claim 39, wherein specifying the set of marketing techniques includes:

concentrating effort on pre-expiration of contract where a contract renewal may not be required.

41. (Original) The computer-readable medium of claim 33, wherein specifying the set of marketing techniques based on the shape includes:

determining, based on the shape of the hazard function, that there is a large increase in probability of churn at expiration with high and increasing post-expiration probability of churn.

42. (Currently amended) The computer-readable medium of claim 41, wherein specifying the set of marketing techniques includes:

~~having specifying~~ a high intensity pre-expiration effort with continued competitive offers to maintain the customer.

43. (Currently amended) The computer-readable medium of claim ~~33~~ 34, wherein specifying the incentives includes:

determining that a value of the set of incentives ~~offered to each of the plurality of new customers~~ does not exceed the gain in lifetime value.

44. (Currently amended) The computer-readable medium of claim ~~33~~ 31, wherein ~~determining a focus for retention-based actions analyzing the shape of the hazard function~~ includes:

clustering ~~all of the hazard function functions~~ for the customer and hazard functions for a plurality of other existing customers ~~each of the plurality of new customers~~ so that the hazard functions with similar shapes can be ~~are~~ grouped together according to shape, each group representative of a customer set.

45. (Currently amended) The computer-readable medium of claim 44, wherein ~~determining a focus for retention-based actions analyzing the shape of the hazard function~~ includes:

determining, based on the overall shape of the clustered hazard functions, a focus for retention-based actions for each customer set ~~what retention efforts to take to keep a new customer.~~

46. (Currently amended) A system for evaluating customer value to guide loyalty and retention programs comprising:

means for ~~calculating an individual customer's tenure~~ generating a hazard function model based on attributes relating to a plurality of current customer accounts;

means for generating a hazard function for ~~each of a plurality of new customers~~ an existing customer, to determine probability of churn, based on the ~~individual customer's tenure~~ hazard function model and account data associated with the customer and corresponding to the attributes;

means for calculating a gain in lifetime value for the customer based on a change in the hazard function ~~each of the plurality of new customers~~; and

means for determining a focus for retention-based actions ~~a loyalty and retention program~~ based on at least one of the hazard function and the gain in lifetime value ~~for each of the plurality of new customers~~.

47. (Currently amended) The system of claim 46, wherein the means for calculating the gain in lifetime value includes:

means for calculating a lifetime value based on original contract terms and revenue associated with the customer ~~generated for each of the plurality of new customers~~; and

means for calculating the gain in lifetime value based on a change in the hazard function resulting from ~~by considering~~ a new contract period using the formula  $ER^* - ER_i(0) = GLTV$ .

48. (Currently amended) The system of claim 46, wherein the means for determining ~~a focus for a loyalty and retention~~ includes:

means for analyzing the shape of the hazard function generated for the customer ~~each of the plurality of new customers~~; and

means for specifying a set of marketing techniques based on the shape of the hazard function.

49. (Currently amended) The system of claim 46, wherein the means for determining ~~a focus for a loyalty and retention program~~ includes:

means for specifying a set of incentives to offer the customer ~~offered to the plurality of new customers~~ based on the gain in lifetime value.

50. (Currently amended) The system of claim 48, wherein the means for specifying the set of marketing techniques based on the shape includes:

means for determining, based on the shape of the hazard function, that there is no effect on churn of a contract expiration.

51. (Currently amended) The system of claim 50, wherein the means for specifying the set of marketing techniques ~~includes~~:

~~means for~~ specifies taking no further steps to deter churn.



52. (Currently amended) The system of claim 48, wherein the means for specifying the set of marketing techniques based on the shape includes:

means for determining, based on the shape of the hazard function, that there is a small increase in probability of churn at contract expiration, with an elevated post-expiration churn.

53. (Currently amended) The system of claim 52, wherein the means for specifying the set of marketing techniques includes:

~~means for having~~ specifies a moderate pre-expiration effort where new contracts or continued contracts are the goal.

54. (Currently amended) The system of claim 48, wherein the means for specifying the set of marketing techniques based on the shape includes:

means for determining, based on the shape of the hazard function, that there is a large spike indicating high probability of churn at contract expiration and low probability of churn thereafter.

55. (Currently amended) The system of claim 54, wherein the means for specifying the set of marketing techniques includes:

~~means for~~ specifies concentrating effort on pre-expiration of contract where a contract renewal may not be required.

56. (Original) The system of claim 48, wherein means for specifying the set of marketing techniques based on the shape includes:

means for determining, based on the shape of the hazard function, that there is a large increase in probability of churn at expiration with high and increasing post-expiration probability of churn.

57. (Currently amended) The system of claim 56, wherein the means for specifying the set of marketing techniques ~~includes~~:

~~means for having~~ specifies a high intensity pre-expiration effort with continued competitive offers to maintain the customer.

58. (Currently amended) The system of claim 48 ~~49~~, wherein the means for specifying the incentives includes:

means for determining that a value of the set of incentives ~~offered to each of the plurality of new customers~~ does not exceed the gain in lifetime value.

59. (Currently amended) The system of claim 48 ~~46~~, further comprising wherein ~~the~~ ~~means for analyzing the shape of the hazard function includes~~:

means for clustering ~~all of the hazard function functions~~ for the customer and hazard functions for a plurality of other existing customers ~~each of the plurality of new customers~~ so that the hazard functions with similar shapes can be ~~are~~ grouped together according to shape. each group representative of a customer set.

60. (Currently amended) The system of claim 59, wherein the means for determining a focus for retention-based actions ~~analyzing the shape of the hazard function~~ includes:

means for determining, based on the overall shape of the clustered hazard functions, a focus for retention-based actions for each customer set ~~what retention efforts to take to keep a new customer.~~

61. (Currently amended) A method, performed by a multilayer feed-forward neural network processing system, for evaluating customer value to guide loyalty and retention programs comprising:

~~calculating an individual customer's tenure based on attributes relating to customer accounts;~~

generating a hazard function for an existing customer, each of a plurality of customers to determine probability of churn, based on the individual customer's tenure account data associated with the customer and corresponding to a set of attributes;

calculating, for the customer ~~each of the plurality of new customers~~, a gain in lifetime value based on a change in the hazard function resulting from a retention effort; and

determining a focus for a retention-based program ~~a loyalty and retention program~~ based on at least one of the hazard function and the gain in lifetime value ~~for each of the plurality of new customers.~~

62. (Currently amended) The method of claim 61 further comprising:  
implementing the loyalty and retention program based on the determined focus.

63. (Previously presented) A method, performed by a processing system, for evaluating customer value to guide loyalty and retention programs comprising:

generating, for each of a plurality of customers, a hazard function to determine a probability of churn for each customer, the hazard function based on attributes relating to customer account information;

identifying a temporal-based retention effort based on the hazard function for each of the plurality of customers;

calculating, for each of the plurality of customers, an expected gain in value from the identified retention effort; and

determining a focus for customer interaction based on the expected gain in value.

64. (Previously presented) The method of claim 63, wherein generating a hazard function comprises:

generating a hazard function, based on a reference hazard function model, for each of the plurality of customers.

65. (Currently amended) The method of claim 63, wherein the temporal-based retention effort comprises retention actions directed to each customer during ~~associated with~~ a first time period and retention actions directed to each customer during ~~associated with~~ a second time period occurring after the first time period.

66. (New) The method of claim 1, wherein calculating a gain in lifetime value based on a change in the hazard function resulting from a retention effort comprises calculating expected revenue multiplied by an increase in remaining lifetime resulting from the retention effort.

67. (New) The method of claim 16, wherein the calculating module calculates the gain in lifetime value based on a change in the hazard function resulting from a retention effort by calculating expected revenue multiplied by an increase in remaining lifetime resulting from the retention effort.

68. (New) The computer-readable medium of claim 31, wherein calculating a gain in lifetime value based on a change in the hazard function comprises calculating expected revenue multiplied by an increase in remaining lifetime resulting from a retention effort.

69. (New) The system of claim 46, wherein the means for calculating a gain in lifetime value calculates the gain in lifetime value based on a change in the hazard function by calculating expected revenue multiplied by an increase in remaining lifetime resulting from a retention effort.

70. (New) The method of claim 61, further comprising:

training the neural network to generate a hazard function model based on account data associated with a plurality of current customer accounts and corresponding to the set of attributes; and

wherein generating a hazard function includes generating a hazard function for an existing customer, to determine probability of churn, based on the hazard function model and the account data associated with the customer and corresponding to a set of attributes.